R-0360-08

2/96

_____New Submittal
_____Revised Submittal R-_____

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

APPLICATION TO REVISE A COAL MINING PERMIT

Note: refer to the Division's "General Guidelines for Processing ARPs" and "Requirements for Specific Types of Common ARPs" for guidance on submitting and processing ARPs.

1. Applicant's Name The Ohio Valley Coal Company

   Address 56854 Pleasant Ridge Road

   City Alledonia State OH ZIP 43902

   Telephone No. 740- 926- 1351

2. Permit No. D-0360

3. Section of Mining and reclamation plan to be revised:

Subsidence Control Plan

4. Describe in detail the proposed revision and submit any necessary drawings, plans, maps, etc.:

A plan to monitor wetlands on the Floyd Simpson was a conditional part of the D-0360-7 approved application. This ARP submits that plan.

5. Describe in detail the reason for requesting the revision:

Required in D-0360-7

6. Will this revision constitute a significant alteration from the mining and reclamation operations contemplated in the original permit?_____Yes,__X__No.
   (Note: refer to paragraph (E) (2) 201501 : 13-4-06 of the Ohio Administrative Code to determine if a revision is deemed significant.)

   If "yes" , complete the following items 7 through 9.

ORIGINAL

7 In the space below give the name and address of the newspaper in which the public notice is to be published.

8 In the space below give the text of the public notice that is to be published. (Include the information required by paragraph (A) (1) of 1501 : 13-05-01 of the Ohio Administrative Code.)

9 In the space below give the name and address of the public office where this application is to be files for public viewing.

I, the undersigned, a responsible official of the applicant, do hereby verify the information contained in this revision request is true and correct to the best of my knowledge and belief.

David L. Bartsch
Print Name

7/23/99
Date

David L Bartsch
Signature

Environmental Coordinator and Permit Administrator
Title

Sworn before me and subscribed in my presence this 23RD day of July 1999.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

FOR DIVISION USE ONLY

This request is hereby Approved

Russ Schoolcraft Robison
Act. Chief, Division of Mines and Reclamation

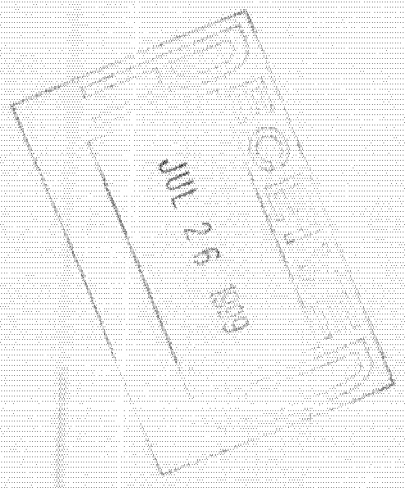
8-27-99
Date

Plan to Monitor Wetlands
Floyd Simpson Property
The Ohio Valley Coal Company
Powhatan No. 6 Mine, Permit D-0360

A potential wetland has been identified on the property of Floyd Simpson in Section 35, Smith Township, Belmont County, Ohio. Approved mining application D-0360-7 requires monitoring of the site for a year before and after mining.

The initial monitoring will consist of mapping of the site and documentation of the conditions. At quarterly intervals a report will be filed with the quarterly monitoring reports for Permit D-0360. The ongoing monitoring will consist of documentation, consisting of taking color photographs, noting of all aspects of surface water hydrology, including taking quarterly water samples and having them analyzed for normal quarterly monitoring parameters, and taking an inventory of soils, plants, and wildlife during this each time period and noting any differences since the last monitoring period. This work will be done by personnel of The Ohio Valley Coal Company after the landowner gives access to the property for this work. The quarterly report will note the relative position of the longwall face and the approximate date of undermining.

THE OHIO VALLEY COAL COMPANY



July 23, 1999

Mr. Russ Gibson
Division of Mines and Reclamation
1855 Fountain Square Court
Columbus, OH 43224

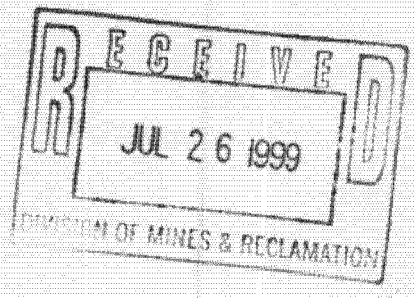
Dear Russ:

Enclosed are two ARP's submitted to you as requested. These ARP's satisfy the requirements of the conditions from the D-0360-7 approved application. If you have any questions please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

cc: File



56854 PLEASANT RIDGE ROAD • ALLEDONIA OHIO 43902
(740) 926-1351 • FAX (740) 926-1615

1/94

Revision Review Due Date Letter

Applicant OVCC; ~~Application~~ Permit No. C-0360-7

Date Revisions Sent 3-31-99

Date Revision Review Due ?

This letter is to be completed by the application manager and attached to those revisions that are sent to the reviewer. A separate letter is to be completed for each reviewer to whom revisions are sent.

Indicate below the person to whom these revisions are being sent:

✓ Environmental Specialist Karen Rizos

_____ Hydrologist (QMR Set?)/CHIA Complete?)

_____ Jack Johannes (_____ PFL, _____ A.R.M.)

_____ Engineer (_____)

_____ Other (identify) _____

RECEIVED
MAY 10 1999

I have reviewed these revisions and find them:

✓ acceptable

_____ unacceptable (submit revision comments below or on a separate page)

Karen S Rizos — Signature

4/30/99 — Date

~~Address the frequency and duration of monitoring after the wetland site has been undermined.~~

RECEIVED
APR - 2 1999
DIV. OF MINES & RECLAMATION
SALEM

F26

1/94

Revision Review Due Date Letter

Applicant DVCC; ~~Application~~ Permit No. D-0360-7

Date Revisions Sent 3-31-99

Date Revision Review Due ?

This letter is to be completed by the application manager and attached to those revisions that are sent to the reviewer. A separate letter is to be completed for each reviewer to whom revisions are sent.

Indicate below the person to whom these revisions are being sent:

✓ Environmental Specialist Kevin Ricks

✓ Hydrologist (QMR Set?)/CHIA Complete?) George Mychkovsky

_____ Jack Johannes (_____ PFL, _____ A.R.M.)

_____ Engineer (_____)

_____ Other (identify) _____

I have reviewed these revisions and find them:

✓ acceptable

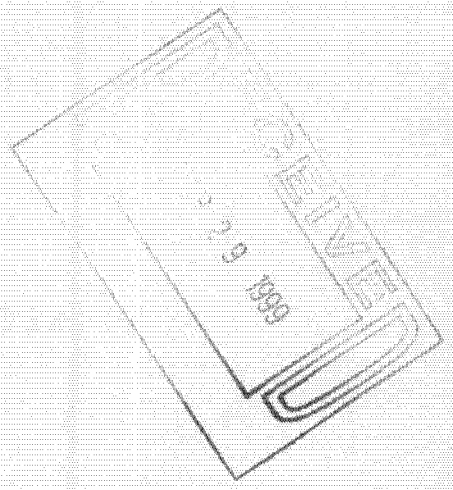
_____ unacceptable (submit revision comments below or on a separate page)

George Mychkovsky
Signature

3/31/99
Date

F26

THE OHIO VALLEY COAL COMPANY



March 26, 1999

Mr. Russ Gibson, Permitting Manager
Division of Mines and Reclamation
1855 Fountain Square Court
Columbus, OH 43224

Dear Russ:

Enclosed is a plan to monitor a wetland on the Floyd Simpson property, submitted in accordance with the conditions of our approved application D-0360-7. If you have any questions, please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

cc: W. J. Siplivy
File

56854 PLEASANT RIDGE ROAD • ALLEDONIA OHIO 43902
(740) 926-1351 • FAX (740) 926-1615

Plan to Monitor Wetlands
Floyd Simpson Property
The Ohio Valley Coal Company
Powhatan No. 6 Mine, Permit D-0360

A potential wetland has been identified on the property of Floyd Simpson in Section 35, Smith Township, Belmont County, Ohio. Approved mining application D-0360-7 requires monitoring of the site for a year before and after mining.

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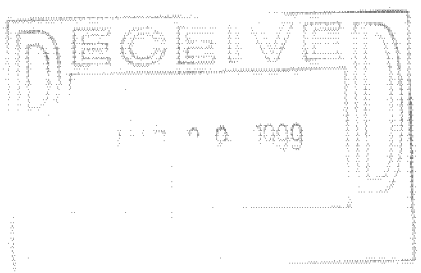

THE OHIO VALLEY COAL COMPANY

August 26, 1999

Mr. Floyd Simpson
44680 Belmont-Centerville Road
Belmont OH 43718

Dear Mr. Simpson:

This letter is to ask for your permission to begin to monitor an area on your property identified by you as a wetland. We have submitted the enclosed monitoring plan to the Ohio Division of Mines and Reclamation as required in our approved permit D-0360. We would like to begin this monitoring as soon as possible. I will be in contact with you to arrange for Mr. William Siplivy of our office to perform this monitoring. If you have any questions about this monitoring, please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

David L. Bartsch

David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

cc: J. R. Forrelli
W. J. Siplivy
R. Gibson
M.S. Stemm
File

Post-it® Fax Note 7671	Date 8-26	# of pages ▶ 2
To Russ Gibson	From Dave Bartsch	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

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Plan to Monitor Wetlands
Floyd Simpson Property
The Ohio Valley Coal Company
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ORIGINAL

WETLANDS INVESTIGATION

Floyd Simpson Property
Section 35, Smith Township, Belmont County, Ohio

D-0360-7

Prepared by:

William J. Siplivy, P.E., C.P.G.
Senior Geological Engineer
The Ohio Valley Coal Company
Alledonia, Ohio

28 September 1999

WETLANDS INVESTIGATION

Floyd Simpson Property
Section 35, Smith Township, Belmont County, Ohio

Introduction

A wetlands investigation was conducted on the Floyd Simpson property, located in the western half of Section 35, Smith Township, Belmont County, Ohio, on the 28th of September, 1999. Mr. and Mrs. Floyd Simpson were present when the investigation began. Viewing conditions were ideal, the sky was clear with full sun, temperature was in the high 70's.

Method

This was a Routine Wetlands Determination, conducted in accordance with procedures set forth in the 1987 Corps of Engineers Wetlands Determination Manual. All field notes were recorded on the data form sheets from the above referenced manual.

Previous Investigations

A wetlands study was conducted by Forshey Redmond, Belmont County Soil Conservation Service, on September 26th, 1997. The study concluded this was a ½ acre wetlands site due to the presence of hydrophytic vegetation, wetland hydrology and hydric soils.

Vegetation

Obligate wetlands plants (OBL) included Typha latifolia (cattails). About a dozen plants were observed over the entire half acre site. OBL plants occur almost always, 99% probability, in wetlands under normal conditions.

Facultative wetland plants (FACW) included Aster novae angliae (New England purple), and Impatience capensis (spotted touch-me-not). FACW plants occur 67 to 99% of the time in wetlands, but also occur 1 to 33% of the time in non-wetlands.

Facultative plants (FAC) included Aster vimineus (small white). FAC plants have a similar likelihood, 33 to 67% probability, of occurring in both wetlands and non-wetlands.

Hydrology

The site is located in the upland portion of a ravine. The site was dry today, the ground surface was firm throughout the study area. Saturated soils are expected seasonally, mostly from late winter to spring. Several soil probes were taken to a depth of 30 inches. All soil samples were found to be damp, but not saturated. Oxidized root channels are present in the upper 12 inches.

Soils

Soils here are classified as Lowell - Westmoreland silt loam by the USDA Soil Conservation Service, Belmont County Soils Survey Report, 1978. A copy of the SCS description is attached. The site-specific soil profile description is contained in the field notes. The soil had an earth odor to a depth of 30 inches, the limit of the probe.

The soil was organic to about 10 inches.

Conclusions

This is wetland as defined by the U. S. Army Corps of Engineers delineation criteria. The site contains hydrophytic vegetation, wetland hyderology and hydric soil. The site is approximately ½ acre in areal extent (90' x 230').

The site was dry on the day of investigation. Mr. David Rucker, a water sampler for Quality Environmental Services, was present to collect a water sample if available.

Attached are the following supporting documents:

1. Field Notes on 1987 Corps of Engineers data form.
2. Aerial photograph, dated 1989, scale 1" = 400'.
3. USGS topographic Map, scale 1" = 2000'.
4. Soil Survey Information from Belmont County SCS Report.
5. Site Photographs.

The site is scheduled for quarterly monitoring. The next inspection will be done in December, 1999.

References

1. Field Guide for Wetland Delineation, 1987 Corps of Engineers Manual, Wetlands Training Institute, Inc., 1995, Poolesville, Md.
2. Practical Handbook for Wetland Identification and Delineation, John Grimson Lyon, Lewis Publishers, 1993.
3. National List of Plant Species That Occur in Wetlands: Northeast (Region 1), Fish and Wildlife service, U. S. Department of the Interior, May 1988, Porter B. Reed, Jr., St. Petersburg, Florida.

Respectfully submitted,

William J. Sipilvy, P.E., C.P.G.
Senior Geological Engineer

DATA FORM

ROUTINE WETLAND DETERMINATION
1987 COE Wetlands Determination Manual

Project/Site: Bishop Road — Date: 28 Sept 1999
Applicant/Owner: Floyd Simpson — County: Belmont
Investigator: William J. Siplivy — State: Ohio
Do Normal Circumstances exist on this site? O No — Community ID: Smith Twp
Is the site significantly disturbed (Atypical Situation)? Yes O — Transect ID: Sect 35 W 1/2
Is the area a potential Problem Area? Yes O — Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Typha Latifolia	H	OBL	9. CATTAIL		
2. Aster Vimineus	H	FAC	(Small white)		
3. Impatience Capensis	H	FACW	(Spotted Touch me not)		
4. Aster Novae-Angliae	H	FACW	(Purple - New England)		
5.			11.		
6.			12.		
7.			13.		
8.			14.		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

RECORDED DATA (Describe in Remarks):
- ☐ Stream Gage or Other Site
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

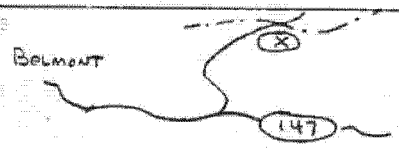
FIELD OBSERVATIONS:
- Depth of Surface Water: 0
- Depth to Free Water in Pit: 0
- Depth to Saturated Soil: 0

WETLAND HYDROLOGY INDICATORS:

PRIMARY INDICATORS:
- ☐ Inundated
- X Saturated in Upper 12 Inches (SEASONAL)
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

SECONDARY INDICATORS (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:



SOILS

LoE, LoD

Map Unit Name (Series and Phase): Lowell-Westmoreland Silt Loams

Drainage Class: WD

Field Observations

Taxonomy (Subgroup): Typic / Ultic Hapludalf

Confirm Mapped Type? Yes (No)

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 4/2	None		Silt Loam
4-10	AB	10YR 4/2	10 yr 4/4	20% Distinct	Silt Loam
10-24	B Wg	10YR 5/2	7.5 yr 4/4	20% Distinct	Silt Loam
24-30	BW	10yr 5/3	10 yr 5/2	40% Faint	Silt Loam
			7.5 yr 4/4	10% Distinct	

HYDRIC SOIL INDICATORS

- [X] Histosol: Organic To 10"
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Streaking in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Hydric Soil Present? Earthy odor To 30" Depth. (Yes) No

Remarks: Narrow stream bottom included w/ upland in mapping. Extension of Newark map unit. Observed soil Aeric/Type Fluvaguent

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No

Wetland Hydrology Present? (Yes) No

Hydric Soils Present? (Yes) No

Is this sampling point a Wetland? (Yes) No

Remarks:

1/2 Acre Site

Previous Wetlands Investigation Performed By:

Belmont Co. SCS

Forshey Redmond 26 Sept 97

Plot 2A

These soils are suited to trees and woodland wildlife habitat. Locating logging roads and skid trails on the contour, if practical, reduces erosion. Mechanical planting and mowing to reduce plant competition are possible on these soils.

Even though the slope of the Westmoreland soil is a limitation, the Westmoreland soil is better suited as a site for buildings and sanitary facilities than the Lowell soil. Limitations in the Lowell soil are moderately slow permeability, slope, seasonal wetness, and the moderate shrink-swell potential of the clayey subsoil. Foundations in the Lowell soil should be designed to prevent structural damage caused by shrinking and swelling of the soil. Foundation drains and exterior wall coatings help to prevent wet basements in homes constructed on the Lowell soil. Local roads on both soils can be improved by providing a suitable base material. Both soils are suited to such recreation uses as picnic areas and paths and trails.

The capability subclass is IIIe. The woodland suitability subclass is 3c for the Lowell soil and 2o for the Westmoreland soil.

LoD—Lowell-Westmoreland silt loams, 15 to 25 percent slopes. This map unit consists of moderately well drained Lowell soil and well drained Westmoreland soil on hillsides. These deep, moderately steep soils are mainly on the upper third of hillsides. A few areas are on narrow ridgetops, knolls on rounded ridgetops, and hillside benches. Slopes are mainly even. Irregularities occur along a few small drainageways. Small sandstone fragments are at the surface of the Westmoreland soil. Most areas are 10 to 100 acres.

Most areas are about 45 percent Lowell silt loam and 35 percent Westmoreland silt loam; the Westmoreland soil, however, is dominant in some areas. The two soils are commonly in alternating strips across the hillside. Steeper areas are dominantly Westmoreland soil. The two soils are in strips so narrow or so intricately mixed that mapping them separately is not practical.

Typically, the surface layer of the Lowell soil is brown, friable silt loam about 7 inches thick. The subsoil is about 35 inches thick. The upper part is yellowish brown, friable silty clay loam, and the middle and lower parts are strong brown and yellowish brown, firm silty clay with mottles below about 25 inches. The substratum is light olive brown, firm gravelly silty clay loam. Hard limestone bedrock is at about 50 inches.

Typically, the surface layer of the Westmoreland soil is brown, friable silt loam about 8 inches thick. The subsoil is about 27 inches thick. The upper and middle parts are brown and dark yellowish brown, friable silt loam and firm clay loam, and the lower part is yellowish brown, firm channery clay loam. The substratum is yellowish brown, firm channery clay loam. Hard sandstone bedrock is at about 50 inches.

Included with these soils in mapping are small areas of somewhat poorly drained soils on concave slopes and near seep spots and Westmore soils on less sloping areas and in saddles on ridgetops. Westmore soils are more silty in the upper part than Lowell and Westmoreland soils. Moderately deep Culleoka soils are included near slope breaks and on the upper part of hillsides. Included soils make up about 20 percent of most areas.

Permeability is moderately slow in the Lowell soil and moderate in the Westmoreland soil. Runoff from cultivated areas is very rapid. The available water capacity is moderate in both soils. Potential frost action is moderate in both soils. The shrink-swell potential is low in the Westmoreland soil and moderate in the Lowell soil. Unless limed, the Westmoreland soil is very strongly acid to medium acid in the root zone. The Lowell soil is very strongly acid to medium acid in the upper part of the root zone and strongly acid to neutral in the lower part.

These soils are used mainly for pasture and crops. The potential is medium for cultivated crops and small grain, high for hay and pasture, and low for building site development and sanitary facilities. The potential for trees is medium in the Lowell soil and high in the Westmoreland soil.

These soils are suited to small grain, to grasses and legumes for hay, and to an occasional row crop. A commonly used rotation includes cultivated crops about one-fourth the time. Deep-rooted legumes are difficult to maintain in many areas. The hazard of erosion is very severe in cultivated areas. Conservation tillage, which leaves crop residue on the surface, grasses and legumes in the cropping system, cover crops, returning crop residue, grassed waterways, contour stripcropping, and cover crops reduce the hazard of erosion. Subsurface drains are needed in included wetter soils. Tilling within the optimum range of moisture content helps to prevent soil compaction.

These soils are well suited to pasture. If they are overgrazed or plowed for seedbed preparation, the hazard of erosion is very severe. Reseeding by trash mulch or no-till seeding or with cover crops or companion crops reduces the hazard of erosion. Proper stocking, pasture rotation, mowing to control weeds, and timely application of lime and fertilizer are needed to maintain a good stand of key forage plants. Controlling grazing in winter and other wet periods helps to prevent soil compaction.

These soils are well suited to trees. Locating logging roads and skid trails on the contour helps to control runoff and erosion. The slope somewhat limits the use of equipment; however, mechanical planting and mowing to reduce competition are possible. Coves and north- and east-facing slopes are the best sites for woodland. These sites have more water available for growth and have cooler temperatures because they have less exposure to the prevailing winds and the sun.

The moderately steep slope and depth to bedrock of both soils and the moderately slow permeability and

some seasonal wetness in the Lowell soil are severe limitations for buildings and sanitary facilities. Maintaining as much cover as possible on the site during construction reduces erosion. Trails in recreation areas should be protected against erosion and should be laid out on the contour if possible.

The capability subclass is IVe. The woodland suitability subclass is 3c for the Lowell soil and 2r for the Westmoreland soil.

LoE—Lowell-Westmoreland silt loams, 25 to 40 percent slopes. This map unit consists of steep, well drained, deep soils on hillsides. Slopes are generally smooth. In some areas, irregularities are along drainageways. Seep spots are common in areas of the Lowell soil. Most areas of this map unit are 10 to 50 acres.

Most areas are about 45 percent Lowell silt loam and 35 percent Westmoreland silt loam. The two soils are in alternating strips across the hillside or in areas so small that mapping them separately is not practical.

Typically, the surface layer of the Lowell soil is brown, friable silt loam about 6 inches thick. The subsoil is about 32 inches thick. The upper part is yellowish brown, friable silty clay loam, and the middle and lower parts are strong brown and yellowish brown, firm silty clay. The substratum is light olive brown, firm gravelly silty clay loam. Hard limestone bedrock is at about 46 inches.

Typically, the surface layer of the Westmoreland soil is brown, friable silt loam about 6 inches thick. The subsoil is about 24 inches thick. The upper and middle parts are brown and dark yellowish brown, friable silt loam and firm clay loam, and the lower part is yellowish brown, firm channery clay loam. The substratum is yellowish brown, firm channery clay loam. Hard sandstone bedrock is at about 46 inches.

Included with these soils in mapping are small areas of somewhat poorly drained soils around seep spots. Also included are the deeper Brookside soils in concave areas or narrow bands on the lower part of some slopes. They are subject to hillside slippage. Included soils make up about 20 percent of most areas.

Permeability is moderately slow in the Lowell soil and moderate in the Westmoreland soil. The available water capacity and potential frost action are moderate in both soils. Runoff is very rapid if the plant cover is removed. The shrink-swell potential is moderate for the Lowell soil and low for the Westmoreland soil. Unless limed, the root zone of the Lowell soil is very strongly acid to medium acid in the upper part and strongly acid to neutral in the lower part. The root zone of the Westmoreland soil is very strongly acid to medium acid.

These soils are used mainly for pasture, trees, and woodland wildlife habitat. The potential is medium for hay and pasture and low for cultivated crops, small grain, sanitary facilities, and building site development. The potential for woodland wildlife habitat is high in both soils.

Even though the steep slope limits the use of some equipment, these soils are suited to pasture. Smooth slopes are suited to hay. If the soils are overgrazed or cultivated for seedbed preparation, the hazard of erosion is very severe. Reseeding by the trash mulch or no-till methods or with a companion crop reduces the hazard of erosion. Proper stocking, pasture rotation, mowing for weed control, and timely application of lime and fertilizer are needed to maintain a good stand of key forage plants. Controlling grazing in winter and other wet periods helps to prevent soil compaction. Deep-rooted legumes are difficult to maintain in many areas.

These soils are suited to trees. Locating logging roads and skid trails on the contour reduces erosion. The steep slopes limit the use of planting and mowing equipment. Coves and north- and east-facing slopes are the best woodland sites. These sites have more water available for growth and have cooler temperatures because they have less exposure to the prevailing winds and the sun.

The steep slope is a severe limitation for buildings, sanitary facilities, and most recreation uses. Hillside slippage is also a hazard on the Lowell soil and on the included Brookside soils. Trails in recreation areas should be protected against erosion and should be laid out on the contour if possible.

The capability subclass is VIe. The woodland suitability subclass is 3c for the Lowell soil and 2r for the Westmoreland soil.

LoF—Lowell-Westmoreland silt loams, 40 to 70 percent slopes. This map unit consists of deep, very steep, well drained soils on hillsides and along deeply entrenched drainageways. Slopes are generally smooth. In some areas, however, slopes have benches and sharp breaks at sandstone bedrock escarpments and irregularities at hillside slips. Most areas are 50 to 200 acres.

Most areas are about 45 percent Lowell silt loam and 35 percent Westmoreland silt loam. The two soils commonly occur in such narrow bands across the hillsides or in areas that are so intricately mixed that mapping them separately is not practical.

Typically, the surface layer of the Lowell soil is brown, friable silt loam about 6 inches thick. The subsoil is about 30 inches thick. The upper part is yellowish brown, friable silty clay loam, and the middle and lower parts are strong brown and yellowish brown, firm silty clay. The substratum is light olive brown, firm gravelly silty clay loam. Hard limestone bedrock is at about 45 inches.

Typically, the surface layer of the Westmoreland soil is brown, friable silt loam about 5 inches thick. The subsoil is about 24 inches thick. The upper and middle parts are brown and dark yellowish brown, friable silt loam and firm clay loam, and the lower part is yellowish brown, firm channery clay loam. The substratum is yellowish brown, firm channery clay loam. Hard sandstone bedrock is at about 42 inches.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
EbB, EbC, EbD, EbE---- Elba	C	None	---	---	>6.0	---	---	>40	Hard	Moderate	High	Low.
ElB, ElC, ElD---- Elkinsville	B	None	---	---	>6.0	---	---	>60	---	High	Moderate	High.
FbB, FbD, FcB, FcD---- Fairpoint	C	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
FtA---- Fitchville	C	None	---	---	1.0-2.5	Perched	Nov-Jun	>60	---	High	High	Moderate.
He---- Hartshorn	B	Occasional	Brief	Jan-Apr	>6.0	---	---	40-72	Hard	Moderate	Low	Moderate.
LeB, LeC, LeD---- Lowell	C	None	---	---	2.5-5.0	Perched	Jan-Mar	>40	Hard	Moderate	High	Moderate.
LeE, LeF---- Lowell	C	None	---	---	>6.0	---	---	>40	Hard	Moderate	High	Moderate.
LoB*, LoC*, LoD*: Lowell----	C	None	---	---	2.5-5.0	Perched	Jan-Mar	>40	Hard	Moderate	High	Moderate.
Westmoreland----	B	None	---	---	3.0-6.0	Apparent	Mar-May	>40	Hard	Moderate	Low	High.
LoE*, LoF*, LpF*: Lowell----	C	None	---	---	>6.0	---	---	>40	Hard	Moderate	High	Moderate.
Westmoreland----	B	None	---	---	3.0-6.0	Apparent	Mar-May	>40	Hard	Moderate	Low	High.
MnB, MnD, MnE---- Morristown	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
MoB, MoD, MoE, MoF---- Morristown	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Ne---- Newark	C	Frequent	Brief	Jan-Apr	0.5-1.5	Apparent	Dec-May	>60	---	High	High	Low.
Nm**---- Newark	D	Frequent	Very long	Oct-Jun	+1-1.0	Apparent	Sep-Jul	>60	---	High	High	Low.
Nn---- Newark Variant	B	Frequent	Very brief	Jan-Apr	1.0-2.5	Apparent	Dec-Apr	40-72	Hard	High	High	Low.
No---- Nolin Variant	B	Occasional	Brief	Feb-Apr	4.0-6.0	Apparent	Feb-Apr	>60	---	High	Low	Low.
Nu*: Nolin Variant----	B	Occasional	Brief	Feb-Apr	4.0-6.0	Apparent	Feb-Apr	>60	---	High	Low	Low.

See footnotes at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
He---------- Hartshorn	0-24	Silt loam-------	ML, SM, SC, CL	A-4	0-5	80-100	75-100	60-90	45-80	20-32	NP-10
	24-40	Stratified very gravelly sandy loam to very gravelly sand.	GM, SM, GP-GM, SP-SM	A-1, A-2	0-15	40-80	30-50	20-50	12-30	---	NP
	40-42	Weathered bedrock.	---	---	---	---	---	---	---	---	---
LeB, LeC, LeD, LeE, LeF---------- Lowell	0-7	Silt loam-------	CL, ML, CL-ML	A-4, A-6	0	100	95-100	85-100	70-90	22-40	4-12
	7-18	Silty clay loam	CL	A-6, A-7	0-2	95-100	95-100	90-100	80-95	34-42	15-22
	18-42	Silty clay, clay	CH, CL	A-7, A-6	0-5	95-100	90-100	80-100	75-95	35-65	14-45
	42-50	Gravelly silty clay loam, shaly silty clay.	GC, CL	A-6, A-7	5-20	65-90	55-80	50-80	45-75	30-45	15-30
	50-52	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
LoB*, LoC*, LoD*, LoE*, LoF*, LpF*: Lowell----------	0-7	Silt loam-------	CL, ML, CL-ML	A-4, A-6	0	100	95-100	85-100	70-90	22-40	4-12
	7-18	Silty clay loam	CL	A-6, A-7	0-2	95-100	95-100	90-100	80-95	34-42	15-22
	18-42	Silty clay, clay	CH, CL	A-7, A-6	0-5	95-100	90-100	80-100	75-95	35-65	14-45
	42-50	Gravelly silty clay loam, shaly silty clay.	GC, CL	A-6, A-7	5-20	65-90	55-80	50-80	45-75	30-45	15-30
	50-52	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Westmoreland-----	0-8	Silt loam-------	ML, CL	A-4, A-6	0	85-100	80-100	75-95	60-95	---	---
	8-28	Clay loam, channery loam, silt loam.	CL, ML, GM, GC	A-4, A-6, A-7, A-2	0-15	65-100	55-95	50-90	45-85	22-45	2-20
	28-50	Very channery loam, channery clay loam, very shaly silty clay loam.	GM, GC, SM, SC	A-2, A-1, A-4, A-6	0-20	25-95	20-95	15-90	15-80	20-40	2-20
	50-52	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MnB, MnD, MnE------ Morristown	0-8	Clay loam-------	CL	A-7, A-6	0-5	90-100	80-100	70-95	60-95	35-50	12-24
	8-60	Gravelly clay loam, gravelly loam, channery clay loam.	GM-GC, GC, CL, CL-ML	A-7, A-6, A-4, A-2	10-25	40-75	30-65	25-65	20-60	25-50	4-24
MoB, MoD, MoE------ Morristown	0-5	Gravelly clay loam.	CL, GC, SC	A-7, A-6	10-25	70-95	50-80	50-75	40-70	35-50	12-24
	5-60	Gravelly clay loam, gravelly loam, channery clay loam.	GC, CL, CL-ML, GM-GC	A-7, A-6, A-4, A-2	10-25	40-75	30-65	25-65	20-60	25-50	4-24
MoF---------- Morristown	0-5	Very stony clay loam.	CL, GC, SC	A-7, A-6	15-40	70-95	50-80	50-75	40-70	35-50	12-24
	5-60	Very gravelly silty clay loam, cobbly loam, cobbly clay loam.	GC, CL, CL-ML, GM-GC	A-7, A-6, A-4, A-2	10-25	40-75	30-65	25-65	20-60	25-50	4-24

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
FcD---------- Fairpoint	Severe: slope, slippage.	Slight---------	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily, droughty.
FtA---------- Fitchville	Moderate: seepage.	Severe: piping.	Severe: no water.	Frost action---	Erodes easily, wetness.	Wetness, erodes easily.
He---------- Hartshorn	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Droughty.
LeB---------- Lowell	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack, wetness.	Severe: deep to water, slow refill.	Favorable------	Wetness--------	Erodes easily.
LeC---------- Lowell	Severe: slope.	Moderate: thin layer, hard to pack, wetness.	Severe: deep to water, slow refill.	Slope----------	wetness--------	Slope, erodes easily.
LeD---------- Lowell	Severe: slope.	Moderate: thin layer, hard to pack, wetness.	Severe: deep to water, slow refill.	Slope----------	Slope, wetness.	Slope, erodes easily.
LeE, LeF---------- Lowell	Severe: slope, slippage.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily, slippage.	Slope, erodes easily.
LoB*: Lowell----------	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack, wetness.	Severe: deep to water, slow refill.	Favorable------	Wetness--------	Erodes easily.
Westmoreland-----	Moderate: seepage, depth to rock, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Favorable------	Erodes easily.
LoC*: Lowell----------	Severe: slope.	Moderate: thin layer, hard to pack, wetness.	Severe: deep to water, slow refill.	Slope----------	Wetness--------	Slope, erodes easily.
Westmoreland-----	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.
LoD*: Lowell----------	Severe: slope.	Moderate: thin layer, hard to pack, wetness.	Severe: deep to water, slow refill.	Slope----------	Slope, wetness.	Slope, erodes easily.
Westmoreland-----	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.
LoE*, LoF*, LpF*: Lowell----------	Severe: slope, slippage.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily, slippage.	Slope, erodes easily.
Westmoreland-----	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, slippage.	Slope, erodes easily.
MnB---------- Morristown	Moderate: slope.	Slight---------	Severe: no water.	Deep to water	Erodes easily	Erodes easily, droughty.

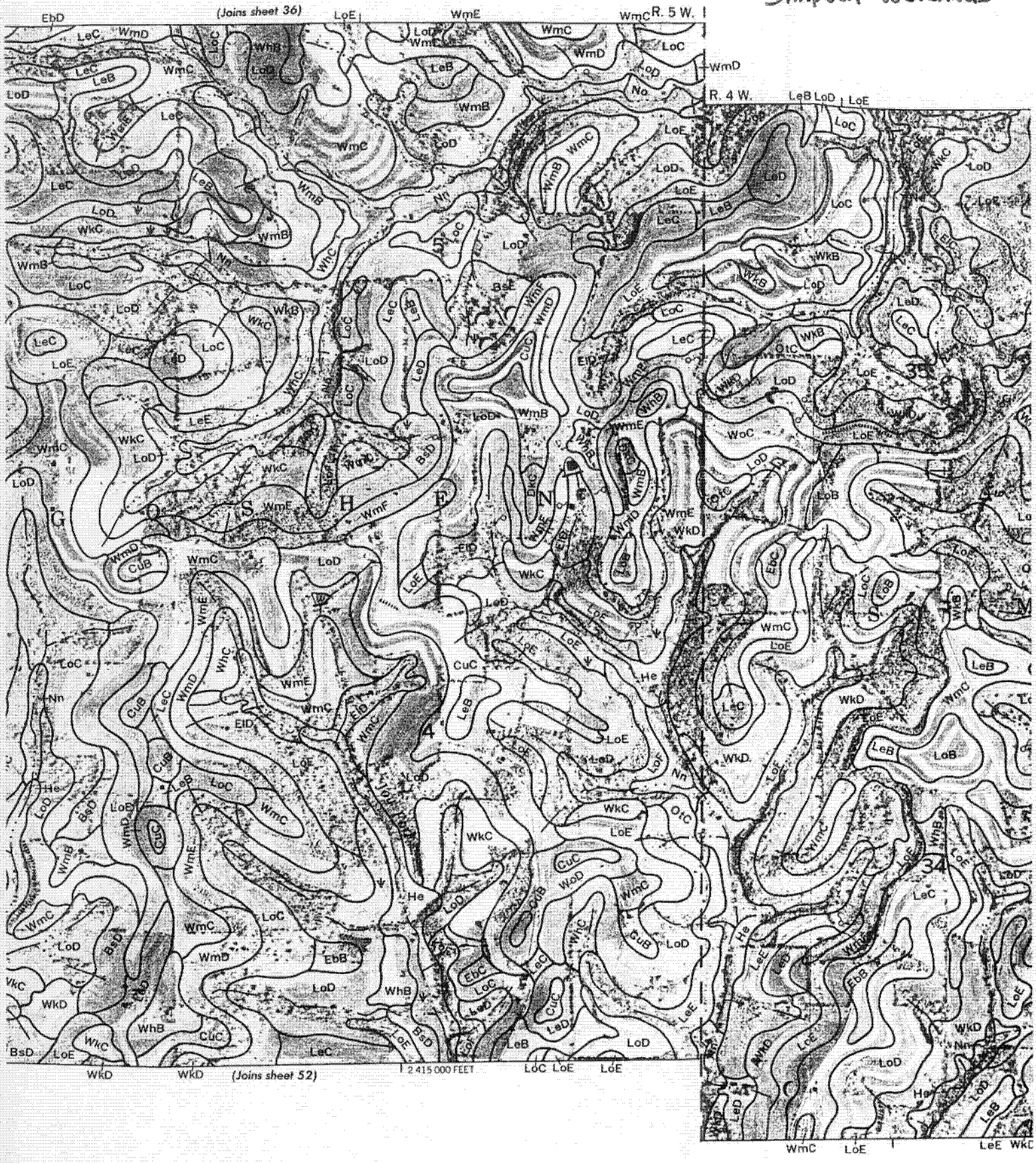
See footnote at end of table.

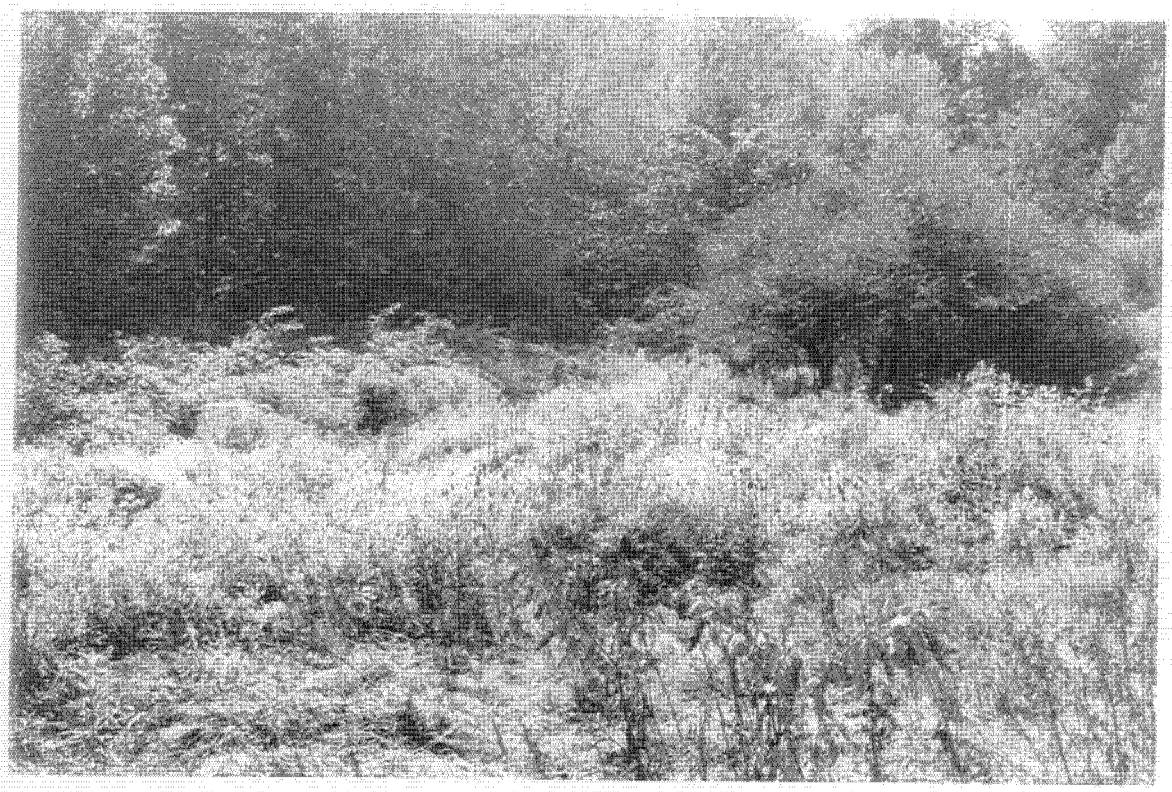
TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
LeB--Lowell	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LeC--Lowell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LeD--Lowell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LeE--Lowell	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LeF--Lowell	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
LoB*:										
Lowell	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Westmoreland	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC*:										
Lowell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Westmoreland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LoD*:										
Lowell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Westmoreland	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LoE*:										
Lowell	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Westmoreland	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LoF*, LpF*:										
Lowell	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Westmoreland	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MnB--Morristown	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
MnD--Morristown	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
MnE--Morristown	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
MoB--Morristown	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
MoD, MoE, MoF--Morristown	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.

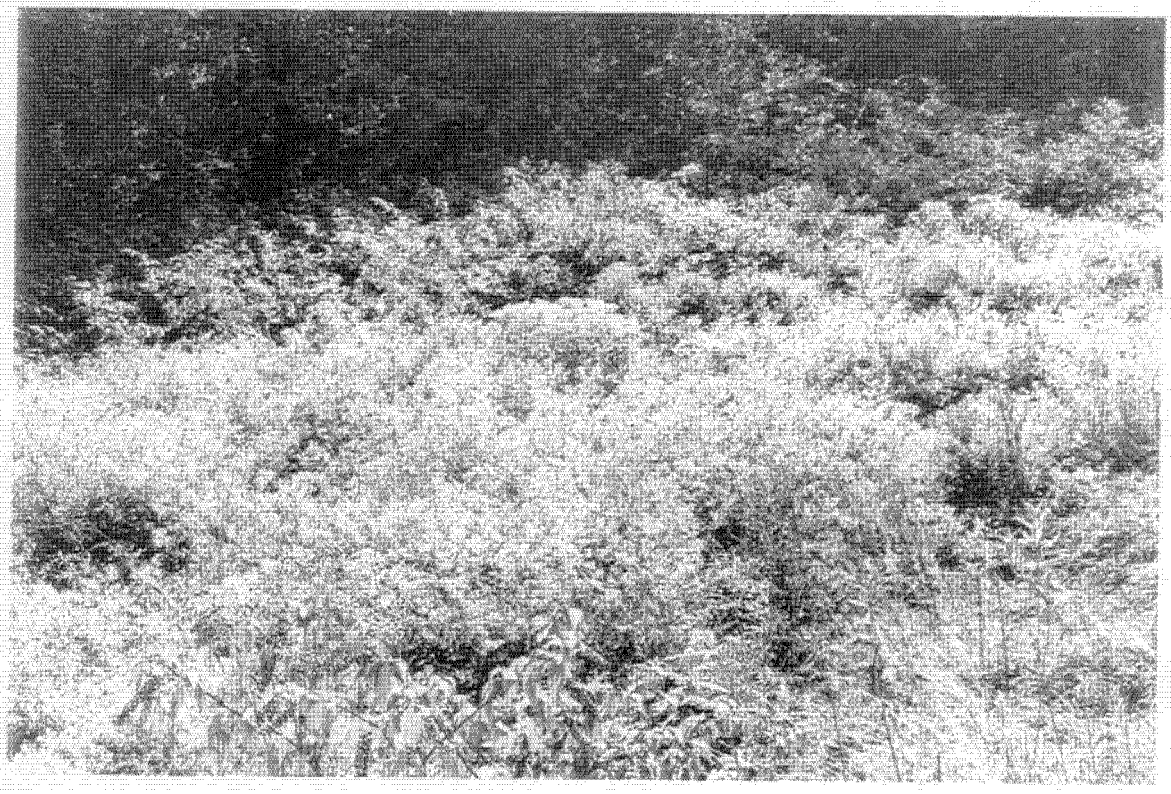
See footnote at end of table.

Simpson Wetlands

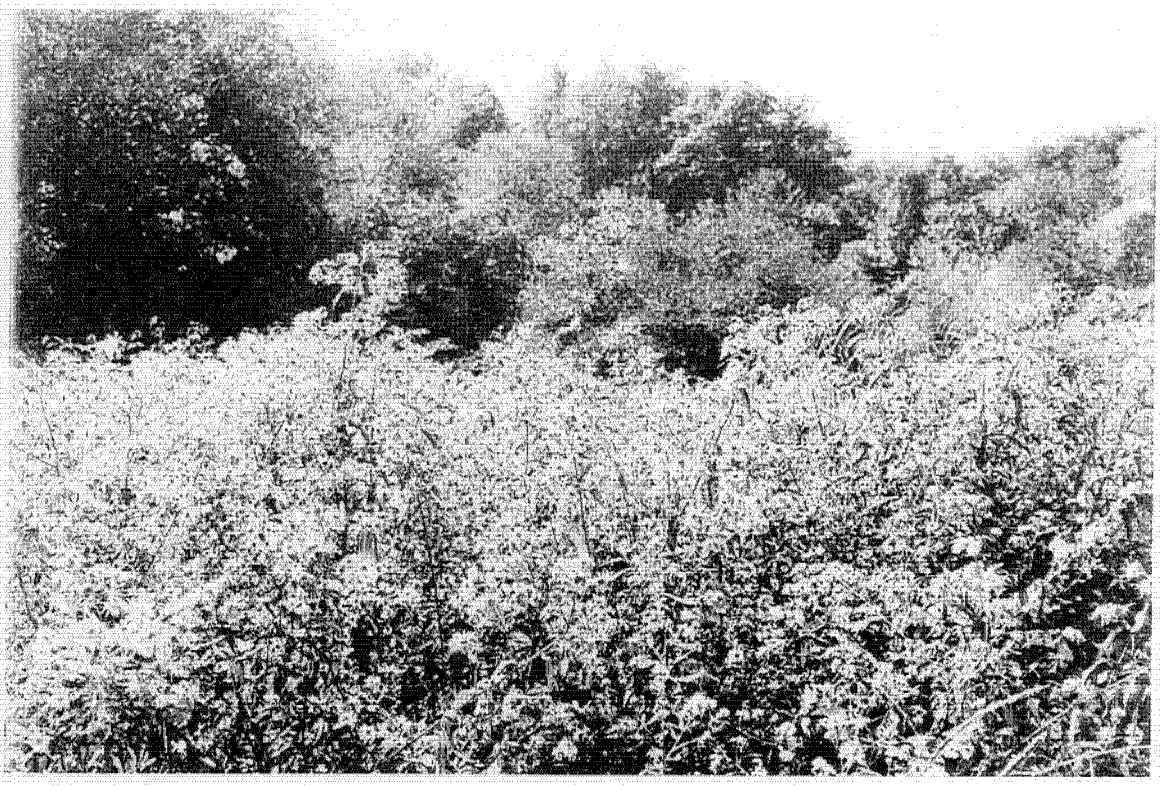




1. Floyd Simpson Wetlands. Upstream view (southwest). Photo taken 28 September.



2. Floyd Simpson Wetlands. Upstream view (southwest). Photo taken 28 September.



3. Floyd Simpson Wetlands. Upstream view (southwest).
Astors are dominent plant species.
Photo taken 28 September.

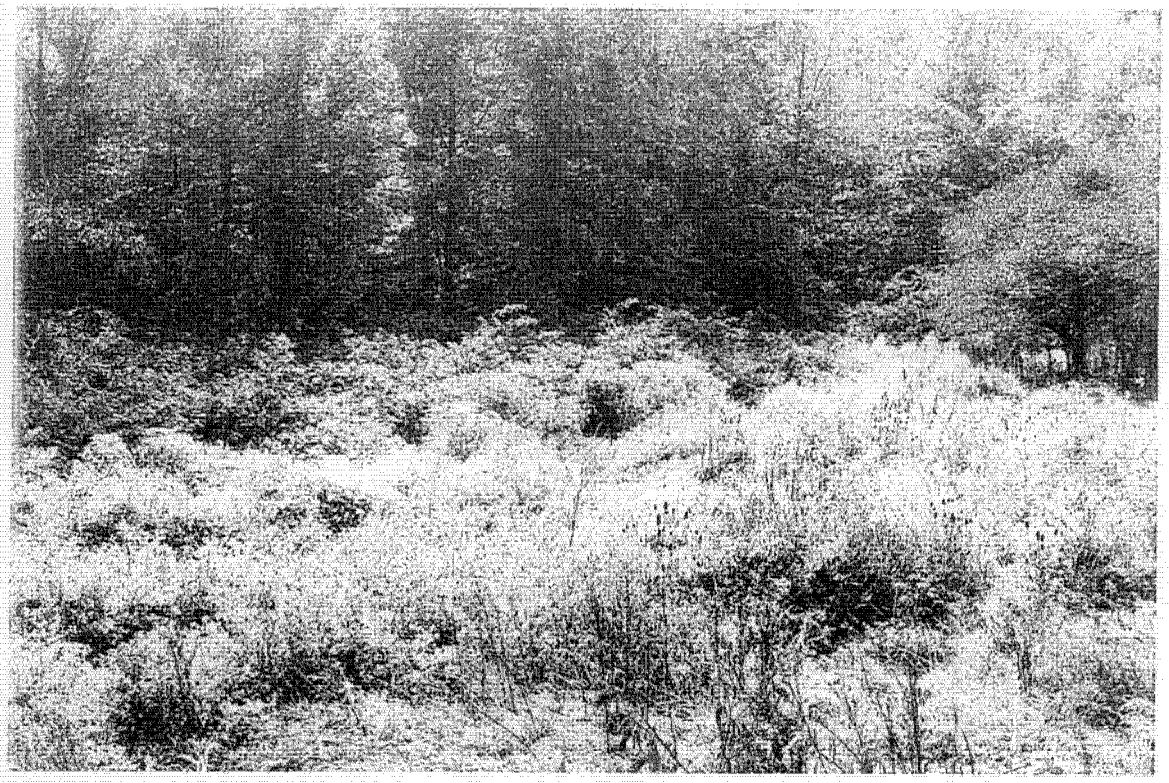
4. Floyd Simpson Wetlands. Upstream view (southeast).
Photo taken 28 September.

5. Floyd Simpson Wetlands. Downstream view (northeast). Large apple tree on left. Photo taken 28 September.

6. Floyd Simpson Wetlands. Downstream view (northeast). Photo taken 28 September.

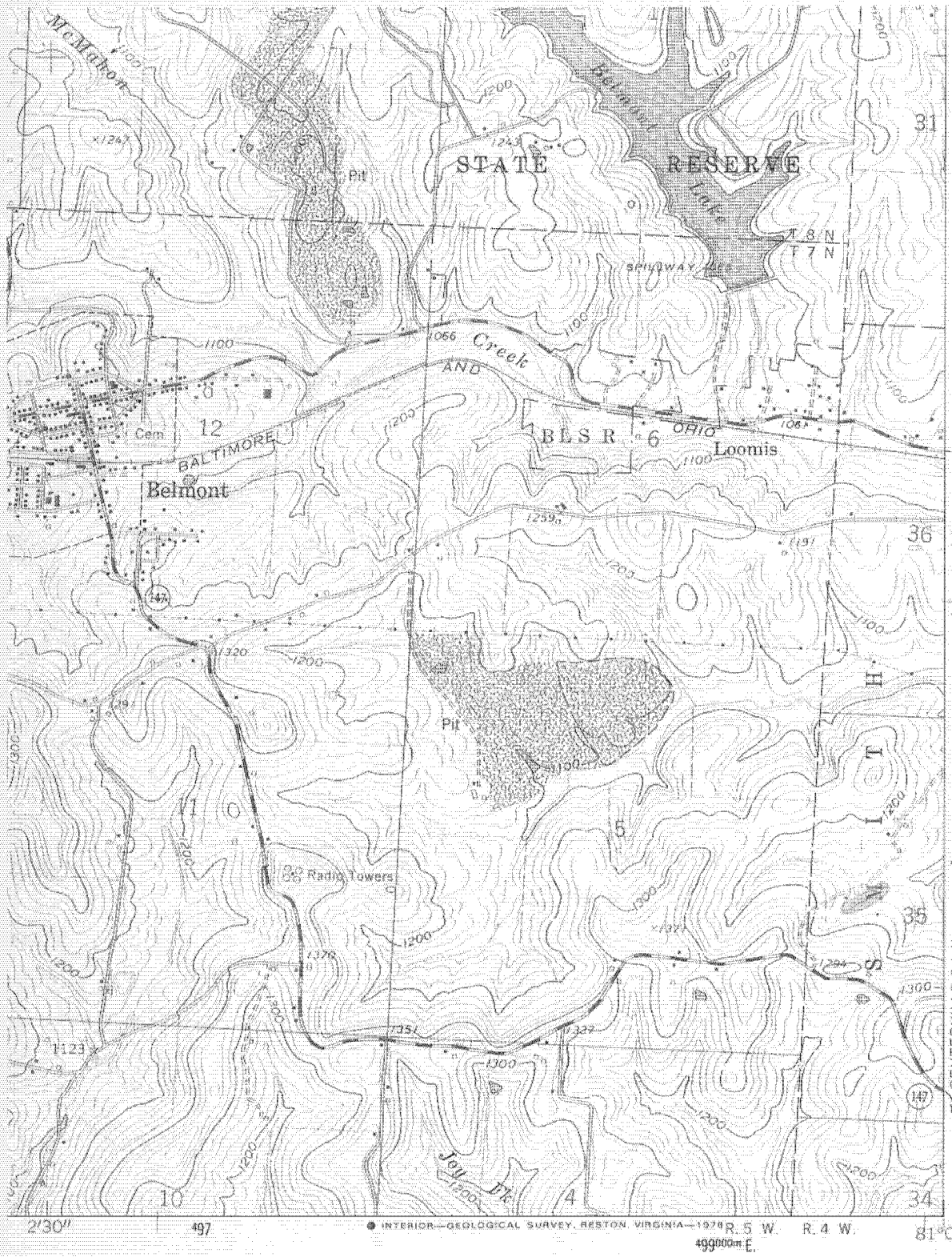
7. Floyd Simpson Wetlands. Downstream view (northeast).
Typical vegetation.
Photo taken 28 September.

8. Floyd Simpson Wetlands. Downstream view (northeast).
Typical vegetation.
Photo taken 28 September.



9. Floyd Simpson Wetlands. Upstream view (southwest).
Drainageway in center of photo.
Photo taken 28 September.

10. Floyd Simpson Wetlands.
Drainage channel was dry during site investigation.
Photo taken 28 September.



MILE

ROAD CLASSIFICATION

Heavy-duty — Light-duty

Medium-duty — Unimproved dirt

U. S. Route — State Route

Interstate Route

QUADRANGLE LOCATION

BETHESDA, OHIO

N4000—W8100/7.5

1961
PHOTOREVISED 1978
AMS 4764 II SE—SERIES V852

Revisions shown in purple compiled in cooperation with State of Ohio agencies from aerial photographs taken 1976. Map edited 1978. This information not field checked

(ARMSTRONGS MILLS)
4863 IV NW

Floyd Simpson
Wetland

TOVCC 07455


TWP 2216A
FLOYD SIMPSON
WETLANDS
SR 148
CHAPEL HILL
N
1" = 400'